WHAT IS CLAIMED IS:

1. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams relatively in one direction.

2. The laser annealing method according to claim 1, wherein the laser beams have a normal-distribution type energy profile in a scanning direction.

3. The laser annealing method according to claim 1, wherein the laser beams have a trapezoidal energy profile in a scanning direction.

4. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams, wherein the laser beams are applied in an overlapped manner so as to illuminate an arbitrarily selected point on the illumination object plural times.

5. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams, wherein the laser beams are applied in an overlapped manner so as to illuminate an arbitrarily selected point on the illumination object 3 to 100 times.

6. A laser annealing method comprising the steps of:

shaping pulse laser beam into linear beams; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams, wherein the laser beams are applied in an overlapped manner so as to illuminate an arbitrarily selected point on the illumination object 10 to 20 times.

7. The laser annealing method according to any one of claims 4 to 6, wherein the laser beams have a normal-distribution type energy profile in a scanning direction.

8. The laser annealing method according to any one of claims 4 to 6, wherein the laser beams have a trapezoidal energy profile in a scanning direction.

9. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams having a normal-distribution type energy profile or an energy profile similar thereto; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams relatively in one direction.

10. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams having a trapezoidal energy profile; and

applying the linear pulse laser beams to an illumination object while scanning it with the laser beams

relatively in one direction.

11. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams having a normal-distribution type energy profile or an energy profile similar thereto in a width direction thereof;

applying the linear pulse laser beams to an illumination region while moving the laser beams in the width direction, in which the laser beams are applied in an overlapped manner so as to illuminate an arbitrarily selected point on the illumination region 10 to 30 times.

12. A laser annealing method comprising the steps of:

shaping pulse laser beams into linear beams having a trapezoidal energy profile in a width direction thereof;

applying the linear pulse laser beams to an illumination region while moving the laser beams in the width direction, in which the laser beams are applied in an overlapped manner so as to illuminate an arbitrarily selected point on the illumination region 10 to 30 times.

13. A laser annealing method comprising the steps of:

emitting pulse laser beams at a rate of N times per second;

shaping the pulse laser beams into linear beams having a width L, a normal-distribution type energy profile or an energy profile similar thereto in a width direction thereof, and an average single-pulse energy density of 100 to 500 mJ/cm^2; and

applying the laser beams to a predetermined region of

a silicon film having a thickness of 150 to 1,000 Å while scanning it with the laser beams in the width direction at a speed V, wherein the number of laser beam pulses applied to the predetermined region in one scan satisfies a relationship $10 \leq LN/V \leq 30$.

14. A laser annealing method comprising the steps of:

emitting pulse laser beams at a rate of N times per second;

shaping the pulse laser beams into linear beams having a width L, a trapezoidal energy profile in a width direction thereof, and an average single-pulse energy density of 100 to 500 mJ/cm^2; and

applying the laser beams to a predetermined region of a silicon film having a thickness of 150 to 1,000 Å while scanning it with the laser beams in the width direction at a speed V, wherein the number of laser beam pulses applied to the predetermined region in one scan satisfies a relationship $10 \leq LN/V \leq 30$.

15. A laser annealing method comprising the steps of:

emitting pulse laser beams at a rate of N times per second;

shaping the pulse laser beams into linear beams having a width L, an energy profile that varies continuously or in a step-like manner in a width direction thereof, and an average single-pulse energy density of 100 to 500 mJ/cm^2; and

applying the laser beams to a predetermined region of a silicon film having a thickness of 150 to 1,000 Å while scanning it with the laser beams in the width direction at a

speed V, wherein the number of laser beam pulses applied to the predetermined region in one scan satisfies a relationship $10 \leq LN/V \leq 30$.

16. The laser annealing method according to any one of claims 11 to 13, wherein the silicon film contains a metal element for accelerating crystallization of silicon at a concentration of 1×10^{16} to 5×10^{19} atoms/cm^{-3}.

17. A laser annealing method comprising the steps of:

emitting pulse laser beams at a rate of N times per second;

shaping the pulse laser beams so that they have an energy profile in which an energy density varies continuously or in a step-like manner over a length L in a predetermined direction; and

applying the laser beams to a predetermined region while scanning it with the laser beams in the predetermined direction at a speed V, wherein the number **n** of laser beam pulses applied to the predetermined region in one scan satisfies a relationship $n = LN/V$.

18. A laser annealing method comprising the step of:

irradiating an object with a laser beam having an energy density profile,

wherein the laser beam melts the object at an irradiation energy density of at least one of a plurality of states of the energy density profile, and heats the object at a temperature less than a melting point of the object at an irradiation energy density of at least another one of the

plurality of states of the energy density profile where the irradiation energy density differs stepwise or continuously among the plurality of states.